

PARTNER : _____

AGILE

RESPONSIVE

LETHAL

VERSATILE

SURVIVABLE

DEPLOYABLE

SUSTAINABLE

XCELLSIS



FUEL CELL AUXILIARY POWER UNIT

Army Chief of Staff General Eric Shinseki has initiated a comprehensive transformation of the Army to enable U.S. forces to dominate across the full spectrum of military operations. Part of this strategy includes reducing the size of the Army's logistics footprint and developing vehicles that are smaller and lighter, yet more reliable, fuel efficient, and survivable. XCELLSIS is currently developing a fuel cell auxiliary power unit (APU) that can help the Army meet these goals.

Military vehicles often run at idle, utilizing powerful engines at their lowest efficiency point, to provide relatively small amounts of electrical power for communications, sensors, vehicle readiness, command and control, and basic amenity applications. Similarly long-haul commercial trucks idle their engines to power sleeper cabin heating and air conditioning and a variety of other accessories during non-driving operations. Although little research has been conducted, it has been estimated that non-driving idling costs the commercial trucking industry nearly \$2 billion per year in fuel costs alone. Idling also significantly increases vehicle emissions and noise levels.

Fuel cell APUs utilizing alternative fuels offer the military and the commercial trucking industry the potential to substantially reduce fuel usage, vehicle emissions, and maintenance costs, by more efficiently and cleanly meeting these power needs. Army self-sufficiency, deployability, and survivability could also be enhanced. The clean, quiet, vibration-free fuel cell APUs also offer the commercial trucking industry the opportunity to improve driver comfort and therefore safety.

To date, XCELLSIS has developed and delivered two prototype fuel cell APUs. The first was demonstrated in a Mercedes S-Class passenger car at the 1999 Frankfurt Auto Show. The second APU was unveiled in a Freightliner Class-8 truck in mid-2000.

In cooperation with Freightliner Corporation and the University of Alabama, XCELLSIS is working with the National Automotive Center (NAC) to evaluate reformer-based, liquid-fuelled fuel cell APUs for military and commercial use. The multi-fuel program will evaluate the capability to process hydrocarbon fuels, including domestically produced synthetics, such as Syntroleum, which have been identified as a key part of the new Inter-Agency initiative for the 21st Century Truck. The results of the project will enable the Army to make environmentally and fiscally sound investment decisions regarding the future development and acquisition of fuel cell-based combat support vehicles.

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